



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/554,081	10/21/2005	Wenhao Wang	KINW-01	4483
26875 7590 06/10/2009 WOOD, HERRON & EVANS, LLP 2700 CAREW TOWER 441 VINE STREET CINCINNATI, OH 45202				
EXAMINER				
PO, MING CHEUNG				
ART UNIT		PAPER NUMBER		
1797				
MAIL DATE		DELIVERY MODE		
06/10/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/554,081

Applicant(s)

WANG, WENHAO

Examiner

MING CHEUNG PO

Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 March 2009.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-15 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-10 and 12-15 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/5508)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This is the response to amendment for application 10/554081 filed on 3/12/2009.
2. Claims 1-10 and 12-15 are pending and have been fully considered. Claim 11 has been canceled.

Claim Rejections - 35 USC § 101/112

3. Claims 9-12 rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility.

Applicant teaches on pages 8 and 9 of the specification that an untreated fuel oil sample was measured with SANS technology. However, applicant states that the neutron scattering instrument could not provide specific information about the composition of the clusters. Applicant states that the curve shape of the results does not provide the size of the molecule clusters in paragraph 5 on page 8 and does not provide specific information about the composition of the clusters in paragraph 2 of page 9. It is unclear as to whether the fuel particles were clusters or if there were other impurities that caused the presence of D1 circles in Figure 3.

Claims 9-12 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 1-10, 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over WENHAO (CN ZL94113646.9) in view of DOLAN (U.S. 5,985,153).

The present application teaches that WENHAO teaches a dual cavity magnetized fuel saver with three cylindrical magnets. **Two magnets with N poles facing each other with a gap of 0.5 – 2.0.** The magnets used may be made of NF30H material and its intrinsic coercivity is **18000-20000 Oersted** with the N pole face magnetic field intensity of 4,000-5,200 Gauss. One magnet is placed inside of the magnetic filter cavity.

Although WENHAO does not teach a gap of less than 0.5 mm, it would be obvious to one of ordinary skill in the art to use a gap that is less than 0.5mm.

One of ordinary skill in the art would expect that a gap that is smaller would produce a larger air gap magnetic field.

Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

WENHAO does not appear to explicitly teach a magnetic field gradient of at least 1.5 tesla/cm in a direction intersecting with the magnetic force lines of a magnetic field intensity of at least 8000 Gauss.

However, DOLAN teaches an apparatus for separating, immobilizing, and quantifying biological substances by employing a high internal gradient magnetic capture structure.

The two inventions are analogous art because they are both concerned with the use of magnetic fields to separate particles in a liquid medium.

DOLAN teaches in lines 49 – 50 of column 1 that internal high gradient magnetic separators have been employed for 50 years and in lines 60 – 61 that gradients as high as **200 kGauss/cm** are easily achieved.

It would be obvious to one of ordinary skill in the art to apply the magnetic field gradient that DOLAN in the magnetic filter cavity that WENHAO teaches

The motivation to do so can be found in lines 50-51 of column 1 of DOLAN, which teaches that an internal magnetic field may remove weakly magnetic materials from slurries,

WENHAO still does not teach a magnetic field intensity of 8,000 Gauss.

However, it would be obvious to one of ordinary skill in the art to use at least a magnetic field intensity of at least 8,000 Gauss.

The motivation to do so is a reasonable expectation of success by increasing the magnitude of the magnetic field.

Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Regarding claims 1-8 and 13-15, WENHAO does not seem to explicitly state the size of the gasoline particles in the dual-cavity magnetized fuel saver.

However, the same process should yield the same product.

WENHAO teaches a substantially similar process.

There is no reason to believe that the fuel saver that modified WENHAO teaches does not produce a fuel oil that contains substantially no granules greater than 3 nm or that the fuel oil used may not be gasoline, diesel oil, kerosene, heavy oil, or bio-diesel.

In the alternative, fuel oils such as gasoline, diesel oil, kerosene, heavy oil or bio-diesel contain molecules that are less than 10 nm. For gasoline, diesel oil, kerosene and heavy oil, the hydrocarbons that make up these fuel oils are hydrocarbons ranging from 5 carbon atoms for gasoline to 60+ carbon atoms for heavy oil. The atomic radius of carbon is 70 pm. A straight chain carbon hydrocarbon would therefore have a radius of about 350 pm.

Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Response to Arguments

Applicant's arguments filed 03/12/2009 have been fully considered but they are not persuasive. Applicant argues the motivation to combine WENHAO and DOLAN. As stated above, the two inventions are analogous art because they are both concerned with the use of magnetic fields to separate particles in a liquid medium. Applicant argues that examiner has not shown that the U.S.C. 101 rejection is improper because the invention has specific and substantial utility. Examiner is rejecting on the basis that the asserted utility is not credible. Applicant argues that references do not give a reason for changing the gap distance. However, WENHAO does state the use of 0.5 –

2mm which would be a varied gap distance. Applicant further argues that the gap would not be a result-effective variable. However, magnetic strength based on the proximity of one magnet to another is common knowledge to one of ordinary skill in the art. Applicant argues that would be no reason to further limit the gap from 0.5 to 2.0 mm because of the reduced fuel flow. However, as stated before, a smaller gap would produce a stronger field. Applicant further argues that the fuel oil generated from the WENHAO would not have inherent properties that would be similar to what the current application teaches. When an examiner has reason to believe that the functional language asserted to be critical for establishing novelty in claimed subject matter may in fact be an inherent characteristic of the prior art, the burden of proof is shifted to Applicant to prove that the subject matter not shown in the prior art does not possess the characteristics relied upon. See MPEP § 2112(V) (citing *In re Fitzgerald*, 619 F.2d 67, 70 (CCPA 1980)).

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MING CHEUNG PO whose telephone number is (571)270-5552. The examiner can normally be reached on 9:00 - 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571)272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ellen M McAvoy/
Primary Examiner, Art Unit 1797

Ming Cheung Po
Patent Examiner